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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/781,946	02/20/2004	Jung Ki Park	2236.0050000/JUK/SMW	9700

26111 7590 01/25/2006

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EXAMINER	
HAMILTON, CYNTHIA	
ART UNIT	**PAPER NUMBER**
1752	

DATE MAILED: 01/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/781,946	PARK ET AL.	
	Examiner	Art Unit	
	Cynthia Hamilton	1752	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12/21/04, 7/09/04, 02/20/04*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 February 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *12/21/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Examiner Notes with Respect to Examination of this Application

1. The examiner notes the following from applicants' specification as limitation or lack of limitation on the instant invention as claimed:

a. From paragraph [0004] : "A photopolymer is obtained by photopolymerizing a photopolymerizable monomer and a photoinitiator in a matrix polymer."

b. From paragraph [0014]: "In the present invention, any polymer having a nano-sized porous structure can be used."

c. "[0023] Having generally described this invention, a further understanding can be obtained by reference to the examples provided herein. These examples are for purposes of illustration only and are not intended to be limiting unless otherwise specified."

d. "[0032] These examples illustrate one possible method of the present invention. While the invention has been particularly shown and described with reference to some embodiments thereof, it will be understood by those skilled in the art that they have been presented by way of example only, and not limitation, and various changes in form and details can be made therein without departing from the spirit and scope of the invention. Thus, the breadth and scope of the present invention should not be limited by any of the above-described exemplary embodiments, but should be defined only in accordance with the following claims and their equivalents. "

e. "[0033] All documents cited herein, including journal articles or abstracts, published or corresponding U.S. or foreign patent applications, issued or foreign patents,

or any other documents, are each entirely incorporated by reference herein, including all data, tables, figures, and text presented in the cited documents."

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 8 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a. Claim 8 recites the limitation "said photoinitiator" in line 2. There is insufficient antecedent basis for this limitation in the claim.

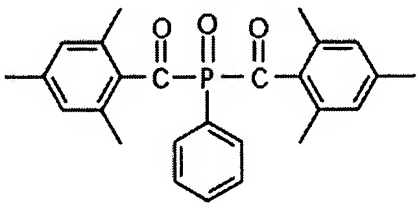
b. Claim 8 recites the limitation "said photosensitizer" in 3. There is insufficient antecedent basis for this limitation in the claim.

c. Claim 8 recites weight percentages with respect to "the monomer", "said photoinitiator" and "said photosensitizer" but there is no clear understanding in considering all of claim 8 as it is dependent upon claim 1 as to what is these percentages pertain. What is 100%? Is there some composition missing? Is there a step missing in claim 1? Thus, the wording of claim 8 does not set forth clear limits with respect to the method claimed.

3. Claim 5 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In the last line of claim 5 is found "acyphosphine". The examiner can find no meaning for this term. Google did not find a hit but suggested "acylphosphine" as a possible

intended word. Thus, what is meant by this term is unknown by this examiner even after consulting general sources of definition. Thus, claim 5 is found indefinite with respect to the term "acyphosphine". For examination purposes, this examiner has assumed applicants intended to use the wording acyl phosphine as found in reference to IRGACURE 819 wherein Bis Acyl Phosphine and Phosphine oxide, phenyl bis (2,4,6-trimethyl benzoyl) are both used as names for the same compound in the Ciba publication, "Photoinitiators for UV Curing: Key Products Selection Guide". The structure is below

IRGACURE 819 and IRGACURE 819 DW



Thus, the examiner has taken "acyphosphine oxide" as used by applicants to include Structures with –C(=O)-P(=O)- structure thereon for examination purposes. However, she is only making an educated guess as to what applicants intended by this term.

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-2 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Chandros et al (EP 1 033 623 A2). With respect to instant claims 1-2 and 9, the method and final product of Chandros et al of Example 2 anticipates the instant method and final product wherein the polymeric matrix made in Example 1 of Chandros et al is the nanoporous polymer of Example 2 wherein the monomer is present in pores of 9.6 nm.

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 1-7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chandros et al (EP 1 033 623 A2). With respect to instant claims 1-7 and 9, Chandros et al teaches the instant method wherein the polymer with the nanoporous structure is made in the presence of the monomer. Chandros et al does not disclose the structure as nanoporous outright but in [0023] describes the resultant polymer matrix as being so when the regions with the remaining, photoimageable system, i.e. the monomer and photoinitiator, is in dimension of about 50 nm or less to avoid light scattering. The method described by Example 2 makes use of a bisected beam to form a hologram with no indication of intensity given but the statement that the recording was performed by known methods. Figure 3 of Chandros et al shows why up to 200 seconds is good for the system of Example 2 of Chandros et al. It is near this point that maximum contrast is obtained. Thus, with respect to instant claim 7, the maximization of intensity of laser sources to obtain the best hologram from the method of Chandros et al would

have been prima facie obvious as well as the times up to about 200 seconds and over a few seconds. With respect to instant claim 3, while polyurethane is not used in an example of Chandros et al, it is listed in [0015] as one matrix material, i.e. "urethane formation". With respect to instant claim 4, the monomers given by Chandros et al as useful as their photosensitive monomer are acrylates, methacrylate, acrylamides, e.g. acrylamide as noted by this examiner, styrene and other vinyl derivatives. With respect to instant claim 5, Chandros et al teach the use of known photoinitiators for the visible part of the spectrum set forth in [0017]. Thus, with respect to instant claims 1-7 and 9, the methods of Chandros et al and the final product of Chandros et al make obvious the instant invention wherein the method and final product of Example 2 one species of the genus claimed reading on claims 1-2 and 9 with other modifications to matrix, monomer, photoinitiator and intensity of imaging would have been prima facie obvious modifications as set forth above. In Chandros et al, see particularly Examples, claims, and Abstract.

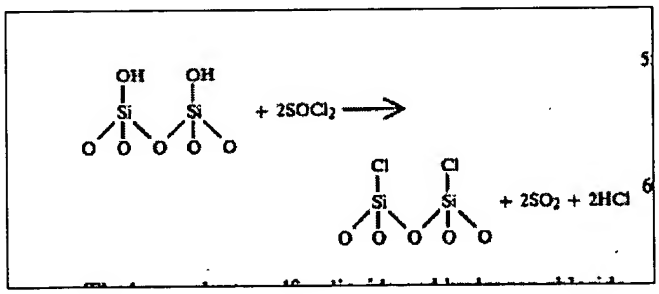
8. Claims 1-2, 4-7 and 9 are rejected under 35 U.S.C. 102(a) as being anticipated by Chang et al (SPIE vol. 5351). Chang et al is a different inventive entity than that of the instant application. The paper printed in Volume 5351 of SPIE dated June 2004 but is the paper presented at A conference of 27 January 2004 thus was known by others before the filing date of this application. With respect to instant claims 1-2, 4-7 and 9, the method and final product set forth by Chang et al under Methodology and in consideration of Figure 2 wherein times from 20 seconds to over 500 with many data points within the range of instant claim 7 are set forth give evidence of a species reading on the instant method and final product disclosed to the public on 27 January 2004 and invented by a different inventive entity than that of the applicants.

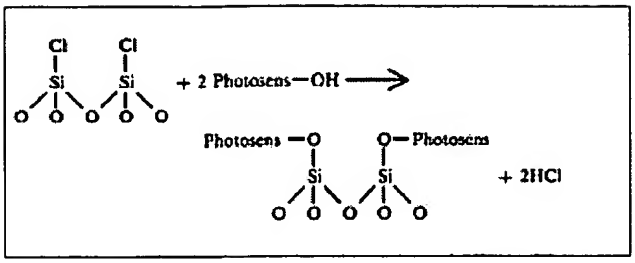
9. Claims 1-4 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Colvin et al (5, 874,187). With respect to instant claims 1-4 and 9, the methods of Colvin et al wherein a matrix is formed in situ then followed by monomer polymerization to form a holographic medium as in the examples inherently anticipates the instant method and final product wherein upon matrix formation a nanoporous matrix is formed for the monomer to flow through and polymerize. The method of Colvin et al is held to inherently form a nanoporous matrix thus inherently produce the final product that is inherently the same as the instant photopolymer.

10. Claims 1 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Mika et al (6,258,276) as evidenced by Lau et al (6,156,812), Garito et al (2003/0175004) and Takayma et al (2003/0229189). Example 1 of Mika et al sets forth a method and final product anticipating the instant method and product of applicant's claims 1 and 9. The porous membrane as set forth in col 6 lines 5-15, has an average pore diameter of 0.2 μm which is 200 nm making the polyethylene or polypropylene microporous substrates nanoporous as well under the broadest art recognized interpretation of "nanoporous" found by this examiner. The examiner is tasked in examination to use the "broadest reasonable interpretation consistent with the specification" of the claim language. In re Hyatt, 211 F.3d 1367, 1372, 54 USPQ2d 1664, 1667 (Fed. Cir. 2000). See particularly MPEP 2111. The examiner is also tasked during examination with respect to the claims to interpret as broadly as their terms reasonably allow. In re American Academy of Science Tech Center, 2004 WL 1067528 (Fed. Cir. May 13, 2004). The words of the claim must be given their plain meaning unless applicant has provided a clear definition in the specification. In re Zletz, 893 F.2d 319, 321, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989); Chef America, Inc. b. Lamb-Weston, Inc., 358 F.3d 1371, 1372, 69 USPQ2d 1857 (Fed. Cir. 2004). Applicant in

instant claim 2, limits the nonporous membrane of claim 1 to that comprised of pores of about 5 nm to about 100 nm in diameter. Thus, in considering the nanoporous membrane of claims 1 and 3-9, the examiner must consider membranes with a broader range of pore size since claim 2 further limits claim 1. The broadest definitions of nanoporous with respect to pore size found by this examiner were 1) Takayama et al which in the Abstract discloses a nonporous polymer material as " ... containing pours with dimension ranging from about 1 nm to about 1000 nm..." , 2) Lau et al in col. 11, lines 55-60 define nanoporous materials as " ... the term "nanoporous material" and "nanoporous composition" refers to any material that includes a significant number of voids with diameters in a range of about 1 nm to about 1000 nm... ", and 3) Garito et al in [0009] reference nanoporous structures as "...Generally, nanopores are larger than the size of an atom but smaller than 1000 nm. " The examiner found many references citing smaller ranges but without clear definition by applicant, the examiner is tasked with using the broadest reasonable definition. Thus, an outer limit of 1,000 nm for the diameter of pores in a nanoporous material was used for examination purposes. Thus, the methods and products of Mika et al fall within this range of nanoporous and thus, anticipate the instant method and product of claims 1 and 9.

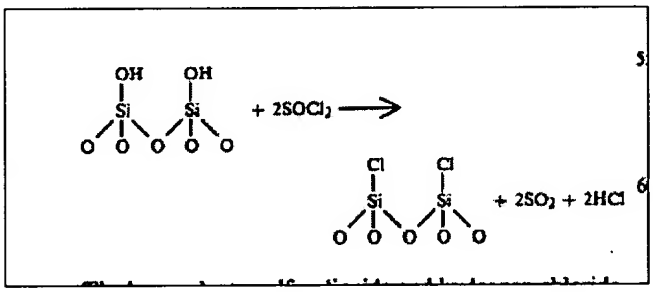
11. Claims 1 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Chandross et al (4,173,475). The VYCOR porous class as shown in col. 3-4 is an inorganic polymer matrix. See as follows:

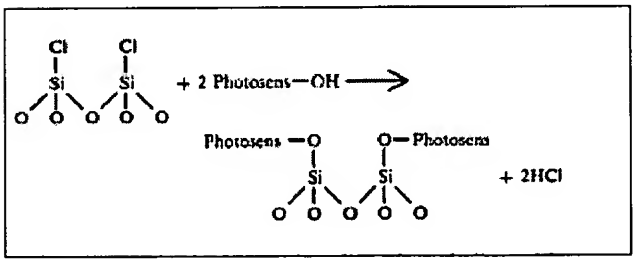




The method and product of instant claims 1 and 9 are not limited to organic polymers with nanoporous structure. The method set forth in 4. Development and Example 2 of Chandross et al anticipates the instant invention.

12. Claims 1-2 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chandross et al (4,173,475). The VYCOR porous class as shown in col. 3-4 is an inorganic polymer matrix. See as follows:





The method and product of instant claims 1 and 9 are not limited to organic polymers with nanoporous structure. The method set forth in 4. Development of Chandross et al anticipates the instant invention with respect to instant claims 1 and 9 and the use of a pore diameter of 40 angstroms, i.e. 4 nanometers. With respect to instant claims 1, 2 and 9 wherein "about 5 nm" is

the lower limit of pore diameter, 4 nanometers is held to be "about 5 nm" thus obvious in view of Chandross et al .The term "about" used to define the area of the lower end of a mold as between 25 to about 45% of the mold entrance was held to be clear, but flexible. *Ex parte Eastwood*, 163 USPQ 316 (Bd. App. 1968). Similarly, in *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983). See particularly MPEP 2173.05(b). With respect to the overlapping range of pore diameter, Chandross et al in col. 2 as shown below encompasses the entire range of instant claim 2 within their general range as well as advantageous range. In Chandross et al see:

> **1. The Porous Matrix and Photosensitive Compound**
>
> **The matrix chosen as the superstructure for the ultimate thick-phase pattern must have certain physical and chemical properties. The pores should be small enough to scatter the exposing light only weakly. If the pores are too large, e.g., larger than about 400 angstroms, substantial scattering during exposure is possible, resulting in a distorted image. Excessively small pores e.g., smaller than about 10 angstroms, hinder or prevent diffusion of the liquid into the matrix, and are unacceptable for thick patterns. Preferably, the pores should be in general between 20 and 400 angstroms and most advantageously between 20 and 200 angstroms. Implicit in the discussion of pore size is the requirement of a rigid matrix. If this requirement is not satisfied, unacceptable changes in overall thickness and/or microscopic dimension during processing are possible.**

In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a *prima facie* case of obviousness exists. *In re Werthheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); *In re Woodruff*, 919 F.2d 1575, 16 UAPQ2d 1934 (Fed. Cir. 1990). See particularly MPEP 2144.05. Thus, with respect to instant claims 1, 2 and 9, the methods of Chandross et al make prima facie obvious the instant

range wherein overlapping of the range is set forth in the preferred range of Chandross et al at 2 to 40 nm, i.e. 20 to 400 angstroms is given.

13. Claims 1, 5 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Miyake et al (EP 1 011 158 A1) evidenced by Lau et al (6,156,812), Garito et al (2003/0175004) and Takayma et al (2003/0229189). With respect to instant claims 1 and 9, the methods and manufactured products of Examples 3- 6 of Miyake et al anticipate the instant methods and photopolymer. The pore diameter of the porous polymer, i.e. polytetrafluoroethylene porous film, used by Miyake et al is disclosed in Example 1 in [0045] as 0.45 μm, i.e. 430 nm. Thus, the microporous substrates of Miyake et al are nanoporous as well under the broadest art recognized interpretation of "nanoporous" found by this examiner. The examiner is tasked in examination to use the "broadest reasonable interpretation consistent with the specification" of the claim language. In re Hyatt, 211 F.3d 1367, 1372, 54 USPQ2d 1664, 1667 (Fed. Cir. 2000). See particularly MPEP 2111. The examiner is also tasked during examination with respect to the claims to interpret as broadly as their terms reasonably allow. In re American Academy of Science Tech Center, 2004 WL 1067528 (Fed. Cir. May 13, 2004). The words of the claim must be given their plain meaning unless applicant has provided a clear definition in the specification. In re Zletz, 893 F.2d 319, 321, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989); Chef America, Inc. b. Lamb-Weston, Inc., 358 F.3d 1371, 1372, 69 USPQ2d 1857 (Fed. Cir. 2004). Applicant in instant claim 2, limits the nonporous membrane of claim 1 to that comprised of pores of about 5 nm to about 100 nm in diameter. Thus, in considering the nanoporous membrane of claims 1 and 3-9, the examiner must consider membranes with a broader range of pore size since claim 2 further limits claim 1. The broadest definitions of nanoporous with respect to pore size found by

this examiner were 1) Takayama et al which in the Abstract discloses a nonporous polymer material as " ... containing pours with dimension ranging from about 1 nm to about 1000 nm..." , 2) Lau et al in col. 11, lines 55-60 define nanoporous materials as " ... the term "nanoporous material" and "nanoporous composition" refers to any material that includes a significant number of voids with diameters in a range of about 1 nm to about 1000 nm... ", and 3) Garito et al in [0009] reference nanoporous structures as "...Generally, nanopores are larger than the size of an atom but smaller than 1000 nm. " The examiner found many references citing smaller ranges but without clear definition by applicant, the examiner is tasked with using the broadest reasonable definition. Thus, an outer limit of 1,000 nm for the diameter of pores in a nanoporous material was used for examination purposes.

14. Claims 1-2, 4-5 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyake et al (EP 1 011 158 A1) Miyake et al (EP 1 011 158 A1) evidenced by Lau et al (6,156,812), Garito et al (2003/0175004) and Takayma et al (2003/0229189). With respect to instant claims 1-2, 4-5 and 9, Miyake et al teach the instant method along with final product with the exception of using the word "photopolymer" and "nanoporous". The porous body of Miyake et al set forth in [0019] has pore diameter from 0.05 to 5 μm, i.e. 50 nm to 5000 nm, with a preferred range of 0.2 to 3 μm, i.e. 200 nm to 3000 nm., and is an organic polymer inclusive of polyethylene, polypropylene, polyvinylidine fluoride and others. This porous membrane is fixed in structure by coating with a monomer mixture inclusive of a crosslinker then polymerized and crosslinked in place. These monomers are inclusive of N-vinyl 2-pyrrolidone and ethyl acrylate and acrylamide. The porous structure is impregnated with a monomer mixture then polymerized either yb thermal polymerization or photopolymerization. Examples 3-6 of Miyake et al make use of photopolymerization and a porous material with 430 nm pore diameter. The pore diameter of the porous polymer, i.e. polytetrafluoroethylene porous film, used by Miyake et al is

disclosed in Example 1 in [0045] as 0.45 μm, i.e. 430 nm. Thus, the microporous substrates of Miyake et al are nanoporous as well under the broadest art recognized interpretation of "nanoporous" found by this examiner. The examiner is tasked in examination to use the "broadest reasonable interpretation consistent with the specification" of the claim language. In re Hyatt, 211 F.3d 1367, 1372, 54 USPQ2d 1664, 1667 (Fed. Cir. 2000). See particularly MPEP 2111. The examiner is also tasked during examination with respect to the claims to interpret as broadly as their terms reasonably allow. In re American Academy of Science Tech Center, 2004 WL 1067528 (Fed. Cir. May 13, 2004). The words of the claim must be given their plain meaning unless applicant has provided a clear definition in the specification. In re Zletz, 893 F.2d 319, 321, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989); Chef America, Inc. b. Lamb-Weston, Inc., 358 F.3d 1371, 1372, 69 USPQ2d 1857 (Fed. Cir. 2004). Applicant in instant claim 2, limits the nonporous membrane of claim 1 to that comprised of pores of about 5 nm to about 100 nm in diameter. Thus, in considering the nanoporous membrane of claims 1 and 3-9, the examiner must consider membranes with a broader range of pore size since claim 2 further limits claim 1. The broadest definitions of nanoporous with respect to pore size found by this examiner were 1) Takayama et al which in the Abstract discloses a nonporous polymer material as " ... containing pours with dimension ranging from about 1 nm to about 1000 nm..." , 2) Lau et al in col. 11, lines 55-60 define nanoporous materials as " ... the term "nanoporous material" and "nanoporous composition" refers to any material that includes a significant number of voids with diameters in a range of about 1 nm to about 1000 nm... ", and 3) Garito et al in [0009] reference nanoporous structures as "...Generally, nanopores are larger than the size of an atom but smaller than 1000 nm. " The examiner found many references citing smaller ranges but without clear definition by applicant, the examiner is tasked with using the broadest reasonable definition.

Thus, an outer limit of 1,000 nm for the diameter of pores in a nanoporous material was used for examination purposes. With respect to instant claims 1-2, 4-5 and 9, the methods of Miyake make prima facie obvious the instant method and final product wherein the overlapping range of 50 to 1000 nm for pore diameter is used. In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a *prima facie* case of obviousness exists. *In re Werthheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); *In re Woodruff*, 919 F.2d 1575, 16 UAPQ2d 1934 (Fed. Cir. 1990). See particularly MPEP 2144.05. In Miyake et al, see particularly [0037-0041], [0032], [0023], [0041] and claim 17. The monomers of Miyake et al are photopolymerized thus form a photopolymer as defined by applicants in the instant invention.

15. Claims 1-3 and 9 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Yeshin (3,658,529). With respect to instant claims 1-3 and 8-9, Yeshin discloses the method of impregnating a pours essentially transparent support with a photocurable composition containing polyene, polythiol and a photocuring rate accelerator. The polyene and polythiol are monomers that are cured into a polymer when irradiated thus are the instant monomers. The impregnated material is then exposed and photocured. The only part not so disclosed by Yeshin in his abstract is the issue if the support is nanoporous. However, with respect to anticipation, Yeshin clearly discloses in col. 6 choices of polymeric layers of cellulose acetate, polystyrene among others such as polyvinyl acetate. While the pore diameter is not set forth in Yeshin, the description of required permeability and density in col. 7, is held by this examiner to be inherent in many of the substrates set forth by Yeshin when describing the "looseness" of the polymer structure. Thus, the choice of any one polymer

listed as a choice by Yeshin in the method of Yeshin would anticipate the instant invention or , in the alternative, make prima facie obvious the instant invention.

16. Claims 1-3 and 9 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Yeshin (3,658,529). With respect to instant claims 1-3 and 9, Yeshin discloses the method of impregnating a pours essentially transparent support with a photocurable composition containing polyene , polythiol and a photocuring rate accelerator. The polyene and polythiol are monomers that are cured into a polymer when irradiated thus are the instant monomers. The impregnated material is then exposed and photocured. The only part not so disclosed by Yeshin in his abstract is the issue if the support is nanoporous. However, with respect to anticipation, Yeshin clearly discloses in col. 6 choices of polymeric layers of cellulose acetate, polystyrene among others such as polyvinyl acetate. While the pore diameter is not set forth in Yeshin, the description of required permeability and density in col. 7, is held by this examiner to be inherent in many of the substrates set forth by Yeshin when describing the "looseness" of the polymer structure. Thus, the choice of any one polymer listed as a choice by Yeshin in the method of Yeshin would anticipate the instant invention or , in the alternative, make prima facie obvious the instant invention. In Yeshin, see particularly the Examples.

17. Claims 1-3 and 9 are rejected under 35 U.S.C. 103(a) as obvious over Yeshin (3,658,529). With respect to instant claims 1-3 and 8-9, Yeshin discloses the method of impregnating a pours essentially transparent support with a photocurable composition containing polyene , polythiol and a photocuring rate accelerator. The polyene and polythiol are monomers that are cured into a polymer when irradiated thus are the instant monomers. The impregnated

material is then exposed and photocured. The only part not so disclosed by Yeshin in his abstract is the issue if the support is nanoporous. However, with respect to anticipation, Yeshin clearly discloses in col. 6 choices of polymeric layers of cellulose acetate, polystyrene among others such as polyvinyl acetate. While the pore diameter is not set forth in Yeshin, the description of required permeability and density in col. 7, is held by this examiner to be inherent in many of the substrates set forth by Yeshin when describing the "looseness" of the polymer structure. Thus, the choice of any one polymer listed as a choice by Yeshin in the method of Yeshin would make prima facie obvious the instant invention as would the addition of up to 50 percent of photo accelerators as set forth in col. 8.

18. Claims 1-2 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Kawai (JP-7654 and accompanying English Abstracts). This document has been submitted for full translation into English. All rejections are written in view of the abstracts attached. With respect instant claims 1-2 and 9, the method of forming the reverse osmotic membrane by impregnation of a porous transparent polypropylene film with monomer and photoinitiator by Kawai is held anticipatory of the instant method and photopolymer formed. The examiner notes that the formation of a membrane for reverse osmosis requires pores inherently in the size of nanopores, thus the porous polypropylene film is the nanoporous substrate.

Prior art made of record and not relied upon

19. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The examiner notes Derwent –ACC-No: 2004-523920, which is an English, abstract of KR 2004017910 A (not made of record) with a publication date of March 2, 2004. This is a published application of Korean application 2002KR-0049825 filed August 22, 2002. The

inventive entity appears to be the same, is not prior art under the patent statutes. Fu (6,598,459) teaches forming aerogels wherein polymers have been formed on the surface thereof by polymerization but no mention is made of using photopolymerization, i.e. forming a polymer as to be a photopolymer.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cynthia Hamilton whose telephone number is 571-272-1331. The examiner can normally be reached on Monday through Friday 9:30 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia H. Kelly can be reached on (571) 272-0729. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

CYNTHIA HAMILTON
PRIMARY EXAMINER

Cynthia Hamilton
Primary Examiner
Art Unit 1752

January 22, 2006